



# WATCHMAN<sup>®</sup> SONIC

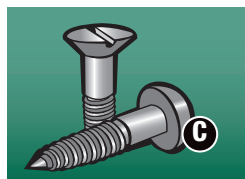
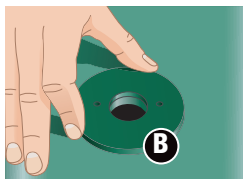
ULTRASONIC OIL LEVEL MONITOR

# INSTALLATION INSTRUCTIONS

This product is to be used only on oil tanks within the parameters outlined in the specifications. Any use of the product on applications that lie outside these specifications is done so at users own risk.

## READ FULLY BEFORE INSTALLATION AND USE

|  |                        |                        |                          |                              |   |   |                             |
|--|------------------------|------------------------|--------------------------|------------------------------|---|---|-----------------------------|
| <b>1</b><br>Check level, distance and Height | <b>2</b><br>Drill Tank | <b>3</b><br>Apply Base | <b>4</b><br>Measure Tank | <b>5</b><br>Set Dip Switches | <b>6</b><br>Pair the Receiver & Transmitter | <b>7</b><br>Fit Transmitter to the Base | <b>8</b><br>Check the level |
|--|------------------------|------------------------|--------------------------|------------------------------|---|---|-----------------------------|



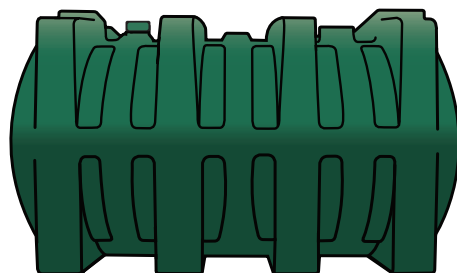
**A** RECEIVER **B** WEATHER SEAL **C** SCREWS **D** WATCHMAN SONIC TRANSMITTER **E** WATCHMAN SONIC BASE

## 1. CHECK LEVEL, DISTANCE AND HEIGHT

Ensure before you start your install that the tank the WatchmanSonic is to be fitted to is:

1. On a flat level base.
2. Within a 200 metre range from receiver position.
3. A maximum actual tank height of 3 metres.  
50 metre effective range (200 metre clear line of sight).
4. Tank must be fitted in accordance with manufacturers guidelines & instructions.

NB: Any radio frequency signal may be seriously inhibited if positioned underground. Please check that the transmitter / receiver link works in the desired location before installation.



Tank positioned on a level surface

## 10. TECHNICAL INFORMATION

The WatchmanSonic is suitable for use in tanks for the storage of diesel, water, fuel, kerosene, and gas oil types A2, C1, C2 and D as defined by BS 2869. Check with the manufacturer and/or supplier before using with any other fluids.

In the event of a power failure or if the receiver is switched off or moved to a new socket: When power returns again or unit is switched on, the receiver display screen will show the top bar flashing. There is no need to repeat the matching instruction. The top bar will continue to flash for 2 minutes, after which time the last valid signal is displayed. It may take up to two hours for the next transmission from the transmitter.

### CHANGING BATTERY

Please note opening the unit will potentially affect the lifespan of the unit.

#### Under Warranty

If a unit is still under warranty and is clearly showing low battery symbol (Shown in picture 15), please contact our Watchman helpline. Units under warranty **SHOULD NOT BE OPENED**. Warranty will be void if unit is opened within the warranty period.

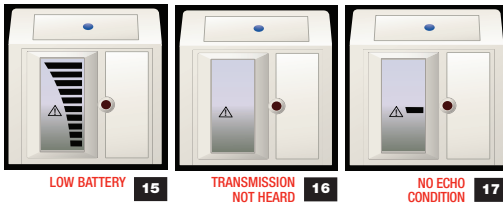
#### Out of Warranty Only

Though the lithium battery will have a very long service life, it will eventually become exhausted and will need replacing.

Batteries can be purchased from a good photographic shop or chemist. The battery model is: VARTA CR2430.

- Remove transmitter from tank
- Take transmitter indoors, into a clean dry environment
- Using a cross point screwdriver, undo the four screws, located under the main body of transmitter
- Remove the top cover
- Flip out battery
- Clip in new battery
- Re-fit cover
- Evenly tighten all four screws - do not over tighten
- Replace transmitter on the tank

If the receiver detects a low battery the following warning message is displayed on the LCD. The level of oil in the tank plus a constantly flashing warning triangle. (Shown in picture 15)



### TRANSMISSION NOT HEARD

If the receiver detects a transmission not heard for a long time the symbol outlined in Pic 16 is displayed on the LCD. This starts approximately 12 hours from the last received good signal. (Shown in picture 16). To rectify this re-site the receiver in a location where the transmission is heard. Rematch receiver and transmitter as per point 6.

### NO ECHO CONDITION

If the receiver detects a No Echo Condition the following message is displayed on the LCD. Warning triangle constantly flashing plus indication bar 5 on. (Shown in picture 17). To rectify this situation check that the transmitter unit is correctly positioned on the tank and no interference is present from a tank wall, corrugation or window.

## 11. GUARANTEE

The WatchmanSonic has a warranty period of 1 year. For each product accepted by Kingspan Environmental as warrantable, Kingspan Environmental will rework or replace the product and return to the customer at Kingspan Environmental expense. The warranty becomes invalid if the sealed unit is opened (Part D).

Kingspan Environmental will not warrant products that have been:

- Used outside the functional and environmental conditions for which they were designed.
- Physically abused, incorrectly handled/ installed or damaged in transit.
- Purchased over 1 year ago. (Proof of purchase will be required).
- Returned to Kingspan Environmental in a form other than in which they were originally supplied.
- Subjects to "Act of God", e.g.: lightning strike, flood or any other catastrophic event beyond Kingspan Environmentals control.

Any Sensor product deemed damaged by the customer shall be returned to Kingspan Environmentals facility at the customer's expense.

Kingspan Environmental shall not be liable for any costs in relation to the returned products.

The purchase invoice and a description issue should be joined with the faulty product. The product should be returned at your shop or directly at the following address:

### REGISTER GUARANTEE ONLINE:

[www.kingspanenviro.com/guarantee](http://www.kingspanenviro.com/guarantee)

Kingspan Environmental Ltd, Sensor Systems team, 180 Gilford Road, Portadown, Co. Armagh, Northern Ireland BT63 5LF.

Each faulty product must receive Kingspan Environmentals After-Sale-Service approval before being returned.

## 2. TANK PREPARATION

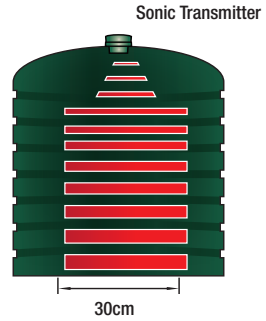
Please note- it is important to keep all items dry during installation.

### A) PRE-DRILLED TANKS.

There may already be a 32mm pre-drilled opening in the tank top and possibly a tube fitted. If so, remove the cover by undoing the two screws holding it in place, and dispose of the tube in accordance with local government guidelines.

**NB – Ensure the hole is a minimum DIAMETER 30mm.**

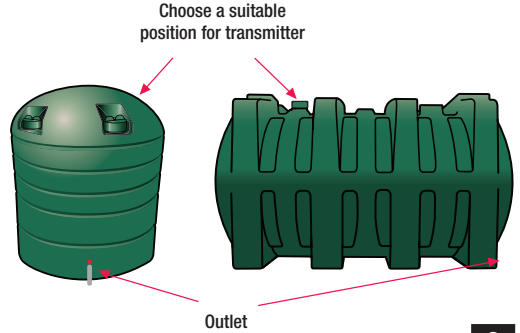
Ensure that the space beneath the WatchmanSonic unit is free of any obstacles and that the ultrasonic beam path is clear of obstructions. (See Picture 2)



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### B) UN-DRILLED TANKS.

Where drilling is required to fit the transmitter, choose a flat level point that is at the same level and no lower than any opening at the top of the tank (filling point etc.). (See Picture 3)



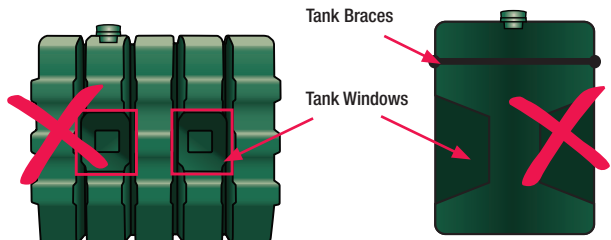
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The Transmitter can't sit at an angle as this gives an incorrect level reading on the receiver. Take care not to choose an area on which water could gather i.e. a dent/depression or a position directly above any restricted area inside the tank. (See Picture 4)



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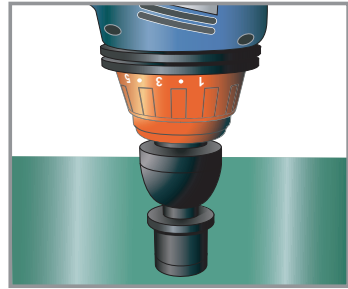
NB: For tanks with window corrugations or internal braces please ensure that the WatchmanSonic is not positioned above or within 15 cm of the area of the WINDOW or the edge of the tank. (See Picture 5). Ensure that the sonic path is clear to the bottom of the tank as per pic 2.



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Drill a hole in the place that you have selected on the tank's top surface using a 32mm hole-saw. (shown in Picture 6)

**Warning:** If you are unsure if you should drill the tank please check with the tank manufacturer first.

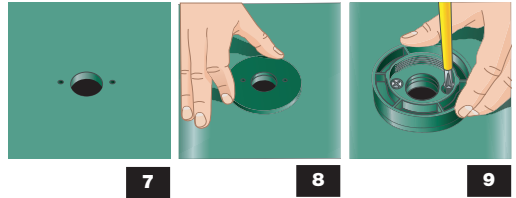


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### 3. FITTING TRANSMITTER BASE

For tanks with pre-drilled holes. Ensure guidelines from points 4 & 5 are adhered to.

- Remove cap from the hole (Picture 7) and insert transmitter base, ensuring the weather seal is securely in place (Picture 8 & 9).
- Tighten the WatchmanSonic base (Part E) on to the tank with 2 stainless steel self-tapping, counter sunk screws supplied (Part C). Do not over tighten!



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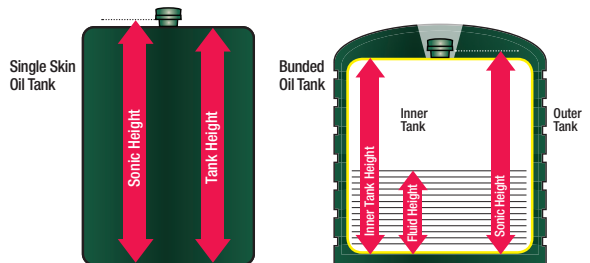
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### 4. DEFINE THE SONIC HEIGHT

Accurately measure the sonic height making note of this measurement. The permissible maximum tank height is 3 metres from the base of your tank to the position of the WatchmanSonic (which should be no lower than the fill point).

- Height does not include the base/piers which tank sits on.



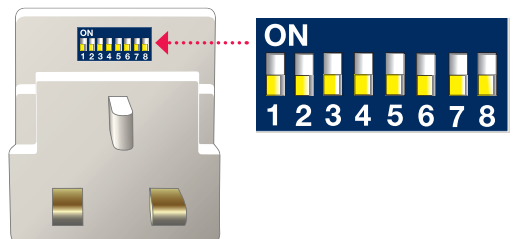
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### 5. SETTING THE SWITCHES ON THE RECEIVER

Using the tank height chart (see section 9), read across to the relevant multi switch setting using tank measurements you took down earlier. The multi switches are located in a recess at the back of the receiver above the pins.

Using a screwdriver or tip of a ballpoint pen, flip the relevant switch (e.g.) upwards (= ON).

**NOTE:** Switches 1 & 2 are factory set switches and are no relevance to the end user. If you wish to set the audible ring feature the Switch1 needs to be moved up. Switch one if set in the on (up) position will cause the unit to beep in the event of a low level reading.



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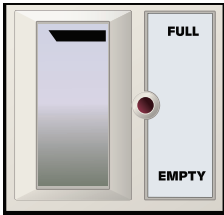
## 6. MATCHING RECEIVER AND TRANSMITTER

You should match the receiver (Part A) with the transmitter (Part D) so that the system code is unique to your tank. Plug receiver into a suitable and convenient electrical socket and switch on.

Plug in the receiver and switch it on. The display screen on the front of the receiver will show a flashing bar (Picture 12). This indicates that the receiver is waiting on a unique code. This bar will continue to flash for 2 minutes during which time you can match the transmitter to the receiver.

Hold the transmitter against the receiver right hand side, as shown (Picture 13), so that the white dot on the transmitter is touching the black dot on the receiver (important!) for about 20 seconds to allow unique code to be transferred. Bars will increase up the display screen and you will hear a clicking sound. When all 10 bars are shown they will flash to indicate that the unique code is transferred. When matched the transmitter must immediately be placed on the tank.

- If you are installing more than one WatchmanSonic unit please wait 15 minutes between each matching.



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## 7. FITTING THE TRANSMITTER TO THE BASE

Screw the transmitter (Part D) into the base (Part E). Ensure the transmitter is vertical on top of the tank and level.

Ensure that the WatchmanSonic unit is screwed correctly into the base and that the threads have not crossed, to give a secure seal. (See Picture 14)

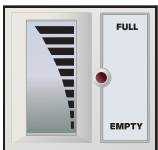


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## 8. CHECK THE LEVEL OF OIL IN THE TANK

The bar graph represents the level of oil in your tank.

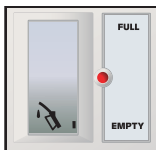
Note: It can take up to 2 hours for the first accurate reading from the WatchmanSonic to be displayed.



FULL



EARLY WARNING



ALMOST EMPTY

## 9. WATCHMANSONIC RECEIVER MULTI SWITCH SETTING CHART

Measure the sonic height of the tank from the transmitter position on top of the tank to the bottom of the tank. Read to the nearest measurement on the chart. Ignore dip-switches 1 & 2. Unless see NOTE under point 5.

| Tank Height (cms) | DIP 3 | DIP4 | DIP5 | DIP6 | DIP7 | DIP8 |
|-------------------|-------|------|------|------|------|------|
| 50                |       |      |      |      |      |      |
| 55                |       |      |      |      |      | ON   |
| 60                |       |      |      |      | ON   |      |
| 65                |       |      |      |      | ON   | ON   |
| 70                |       |      |      | ON   |      |      |
| 75                |       |      |      | ON   |      | ON   |
| 80                |       |      |      | ON   | ON   |      |
| 85                |       |      |      | ON   | ON   | ON   |
| 90                |       |      | ON   |      |      |      |
| 95                |       |      | ON   |      |      | ON   |
| 100               |       |      | ON   |      | ON   |      |
| 105               |       |      | ON   |      | ON   | ON   |
| 110               |       |      | ON   | ON   |      |      |
| 115               |       |      | ON   | ON   |      | ON   |
| 120               |       |      | ON   | ON   | ON   |      |
| 125               |       |      | ON   | ON   | ON   | ON   |
| 130               |       | ON   |      |      |      |      |
| 135               |       | ON   |      |      |      | ON   |
| 140               |       | ON   |      |      | ON   |      |
| 145               |       | ON   |      |      | ON   | ON   |
| 150               |       | ON   |      | ON   |      |      |
| 155               |       | ON   |      | ON   |      | ON   |
| 160               |       | ON   |      | ON   | ON   |      |
| 165               |       | ON   |      | ON   | ON   | ON   |
| 170               |       | ON   | ON   |      |      |      |
| 175               |       | ON   | ON   |      |      | ON   |
| 180               |       | ON   | ON   |      | ON   |      |
| 185               |       | ON   | ON   |      | ON   | ON   |
| 190               |       | ON   | ON   | ON   |      |      |
| 195               |       | ON   | ON   | ON   |      | ON   |
| 200               |       | ON   | ON   | ON   | ON   |      |
| 205               |       | ON   | ON   | ON   | ON   | ON   |
| 210               | ON    |      |      |      |      |      |
| 215               | ON    |      |      |      |      | ON   |
| 220               | ON    |      |      |      | ON   |      |
| 225               | ON    |      |      |      | ON   | ON   |
| 230               | ON    |      |      | ON   |      |      |
| 235               | ON    |      |      | ON   |      | ON   |
| 240               | ON    |      |      | ON   | ON   |      |
| 245               | ON    |      |      | ON   | ON   | ON   |
| 250               | ON    |      | ON   |      |      |      |
| 255               | ON    |      | ON   |      |      | ON   |
| 260               | ON    |      | ON   |      | ON   |      |
| 265               | ON    |      | ON   |      | ON   | ON   |
| 270               | ON    |      | ON   | ON   |      |      |
| 275               | ON    |      | ON   | ON   |      | ON   |
| 280               | ON    |      | ON   | ON   | ON   |      |
| 285               | ON    |      | ON   | ON   | ON   | ON   |
| 290               | ON    | ON   |      |      |      |      |
| 295               | ON    | ON   |      |      |      | ON   |
| 300               | ON    | ON   |      |      | ON   |      |

**YOUR WATCHMANSONIC HAS NOW BEEN SUCCESSFULLY INSTALLED**

## SPECIFICATIONS

|   |   |
|---|---|
| <b>Tank Depth measurement:</b>                    | Minimum depth: 0.5m.<br>Maximum depth: 3m.  |
| <b>Display:</b>                                   | Bar graph level display, 10% tank height per bar.<br>Early warning indication (flashing tank fill) at a predetermined height above tank bottom (see section 11). Tank empty warning flashes red LED at a predetermined height from tank bottom. (see section 11) Meets EN60335. |
| <b>Max communication distance:</b>                | 200m in normal "line of sight" conditions.<br>The effective range of this product can be influenced by external sources that may reduce the range of the transmitter or sensitivity of the receiver.  |
| <b>Power supply:</b>                              | Receiver: 230V, 50-60HZ +/- 10%.<br>Transmitter: 3-voltlithium cell.  |
| <b>Battery life:</b>                              | Up to 3 years (dependant on tank height).   |
| <b>Wireless com:</b>                              | 433 mHz. FM transmission.<br>EN 300-220.  |
| <b>Dimensions:</b>                                | Receiver: 50 x 55 x 35mm (not including aerial).<br>Transmitter: 70x93mm.   |
| <b>Max and min operating temp. (transmitter):</b> | Operating temp. Range -10° to +60 ° C.<br>Operating humidity: 0-100%.<br>Sealed airtight unit made from PP3317 UV stabilized.   |
| <b>Hole size for tank fitting:</b>                | 32mm<br>2" BSP external thread adaptor  |

**Declaration:** this apparatus is designed to: Not give rise to physical injury or other harm due to contact. Not to produce excessive surface temperatures, infrared, electromagnetic, ionising radiation. To have no non-electrical dangers. When used in accordance with these user and installation instructions.

**Warning:** If the equipment is likely to come in to contact with aggressive substances, then it is the responsibility of the user to take suitable precautions that prevent it from being adversely affected, thus ensuring that the type of protection is not compromised. Aggressive substances; - e.g. liquids or gases that may attack metals, or solvents that may affect polymeric materials.

In order to minimize the risks of electric shock,

- i** The receiver is for indoor use only, never use outdoors.
- i** The receiver is a sealed unit; do not attempt to open it.

Supplied by Kingspan Environmental Ltd  
180 Gilford Road, Portadown, Co. Armagh, Northern Ireland

### Safety Information

Do not replace in a potentially explosive atmosphere  
Periodically check that the unit is intact and securely fastened to the tank.  
Check with the manufacturer on the chemical compatibility prior to use.

Do not attempt to repair this equipment. It must be returned to the manufacturer for repair.

Warning! Electrostatic hazard! Clean only with damp cloth.

Use only VARTA CR2430 batteries.

Not suitable for pressurised containers. Use on tanks vented to atmosphere.

Guarantee Period: 1 Year

**FOR SUPPORT CONTACT:**

sensor@kingspan.com

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**SONIC**

ULTRASONIC OIL LEVEL MONITOR

Visit our website [www.kingspansensor.com](http://www.kingspansensor.com)

**Kingspan Environmental Ltd**  
**Sensor Systems Team**

180 Gilford Road, Portadown, Co. Armagh,  
Northern Ireland BT63 5LF.

**Telephone:** +44 (0) 28 3836 4415

**Fax:** +44 (0) 28 3836 4412

**Email:** [sensor@kingspan.com](mailto:sensor@kingspan.com)

  
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